

WHAT IS CLAIMED IS:

1. A semiconductor device including a liquid crystal driving circuit, said liquid crystal driving circuit comprising a digital functional unit, an analog functional unit, and a first terminal for functionally dividing said digital functional unit and said analog functional unit from each other and a second terminal for outputting an output of a test result of said digital functional unit toward outside of said liquid crystal driving circuit without through said analog functional unit.

2. A semiconductor device including a liquid crystal driving circuit, said liquid crystal driving circuit comprising a digital functional unit, an analog functional unit, and a third terminal for functionally dividing said digital functional unit and said analog functional unit from each other and a fourth terminal for controlling a test of said analog functional unit externally of said liquid crystal driving circuit independently of said digital functional unit.

3. The semiconductor device according to claim 1, wherein said digital functional unit includes a display controller and a random access memory (RAM) for storing display data,

said analog functional unit includes a gradation voltage generating circuit and a gradation voltage selecting circuit, and

said device includes hold means for holding

an output of the display data storage RAM to read data held in said hold means to outside of said liquid crystal driving circuit through said second terminal and sets predetermined data in said hold means from the external of said liquid crystal driving circuit through said first terminal.

4. The semiconductor device according to claim 2, wherein said digital functional unit includes a display controller and a display data storage RAM,

said analog functional unit includes a gradation voltage generating circuit and a gradation voltage selecting circuit, and

said device includes hold means for holding an output of said display data storage RAM, reads data held in said hold means to outside of said liquid crystal driving circuit through a data output terminal and sets predetermined data in said hold means from outside of said liquid crystal driving circuit through said third terminal.

5. The semiconductor device according to claim 3, wherein said first terminal and/or said second terminal is used while sharing with a terminal for use during a normal operation.

6. The semiconductor device according to claim 4, wherein said third terminal and/or said fourth terminal is used while sharing with a terminal for use during a normal operation.

7. A semiconductor device having a liquid

crystal driving circuit, wherein said liquid crystal driving circuit includes a digital functional unit including at least a display controller, an analog functional unit including a gradation voltage generating circuit and a gradation voltage selecting circuit, and changeover means for changing an output of said gradation voltage generating circuit to a predetermined two-level voltage value.

8. A testing method of a semiconductor device having a liquid crystal driving circuit including a digital functional unit and an analog functional unit, said method comprising the steps of:

functionally dividing said digital functional unit and said analog functional unit from each other; and

outputting an output of a test result of said digital functional unit to outside of said liquid crystal driving circuit through a first terminal provided on said device without via said analog functional unit.

9. A testing method of a semiconductor device having a liquid crystal driving circuit including a digital functional unit and an analog functional unit, the method comprising the steps of:

functionally dividing said digital functional unit and said analog functional unit; and

controlling testing of said analog functional unit externally of said liquid crystal driving circuit

through a second terminal so as to perform the testing of said analog functional unit independently of said digital functional unit.

10. The testing method of a semiconductor device according to claim 8, wherein said digital functional unit and said analog functional unit are controlled independently of each other to perform testing of said digital functional unit and testing of said analog functional unit in an overlapping manner.

11. The testing method of a semiconductor device according to claim 9, wherein said digital functional unit and said analog functional unit are controlled independently of each other to perform testing of said digital functional unit and testing of said analog functional unit in an overlapping manner.

12. The testing method of a semiconductor device according to claim 10, wherein the testing of said digital functional unit includes a display function test, and the testing of said analog functional unit includes a gradation output test.

13. The testing method of a semiconductor device according to claim 11, wherein the testing of said digital functional unit includes a display function test, and the testing of said analog functional unit includes a gradation output test.

14. A testing method of a semiconductor device having a liquid crystal driving circuit including a digital functional unit with a display controller and a

display data storage RAM and an analog functional unit with a gradation voltage generating circuit and a gradation voltage selecting circuit, said method comprising the steps of:

changing an output of said gradation voltage generating circuit to a two-level voltage value by changeover means;

selectively setting each gradation voltage at one of different two-level voltage values; and

changing an output voltage of said liquid crystal driving circuit to a two-level voltage to thereby perform a gradation output test.